MPEG-3270 & MPEG-4290

3RU & 4RU Dual-Screen, MPEG, ASI, 3G/HD-SDI, and HDMI Video Monitor

User Guide

Part Number 821068, Revision A

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This document is intended to be printed on a duplex printer, such that the copy appears on both sides of each page. This ensures that all new chapters start on a right-facing page.

This document looks best when printed on a color printer since some images may be indistinct when printed on a black and white printer.

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Introduction

Overview

These 3RU and 4RU rack-mounted MPEG/Video/Audio monitors arethe new benchmark in LCD monitors for broadcast and professional video applications requiring support for both file-based and traditional baseband sources. The monitor has 800 x 480 screen resolution, anti-glare TFT screens, and fully digital signal processing. It supports H.264/MPEG-4 Part 10, also known as AVC/H.264 or Advanced Video Coding. It also supports H.262/MPEG-2 Part 2. These are decoded from MPEG-2 TS (Transport Stream) containers in ASI or IP transport interfaces. The TS container format can be either 188 bytes or 204 bytes. Error correction bytes are not used. It does not decode encapsulated transport streams in other formats, such as QuickTime (MPEG4/ H.264). The MPEG-3270 and MPEG-4290 also support 3G/HD-SDI and HDMI. All video formats are scaled to native screen resolution in the highest quality using precision scaling and gamma correction to produce the best images available.

This chapter contains detailed information on safety and installation requirements. It also contains an overview of the front and back panel controls, connectors, and screen features. **To quickly unpack and set up this unit for monitoring, please refer instead to Chapter 2: Quick Start.**

Topics

Topics	Page

Safety

Important Safety Instructions

WARNING: Do not use this equipment near water, rain or moisture.

1. Read, keep, and follow all of these instructions; heed all warnings.

2. Use only a dry cloth to clean the equipment.

3. Do not block any ventilation openings. Install only in accordance with the instructions in the section entitled, "Installation Recommendations" on page 3.

4. Do not install near any heat source such as a radiator, heat register, amplifier, or stove.

5. Do not expose the equipment to rain or moisture.

6. Do not attempt to plug the unit into a two-blade outlet (with only two prongs of equal width).

IMPORTANT: By design, these audio/video monitors will only plug into a three-prong outlet for your safety. If the plug does not fit into your outlet, contact an electrician to replace the obsolete outlet.

7. Protect the power cord from being walked on or pinched, particularly at the plug's source on the equipment and at the socket.

8. Use only the attachments/accessories specified by the manufacturer.

9. Refer all servicing to qualified service personnel. Servicing will be required under all of the following conditions:

- The equipment has been damaged in any way, such as when the power-supply cord or plug is damaged.

- Objects have fallen onto the equipment; or the equipment has been exposed to rain or moisture, or liquid has been spilled onto the equipment.

- The equipment does not operate normally.

- The equipment has been dropped.

Safety Symbols
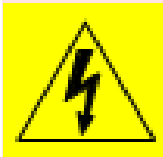
WARNING: The symbol to the left warns of electric shock hazard inside the unit. Disconnect the power cord before removing access panels when installing upgrades. Only qualified service personnel are to operate the equipment with covers removed, and are to exercise caution to avoid personal injury or damage to the equipment from overheating.

Installation Recommendations

Mounting

These units are designed to install into a standard 19" rack mounted at eye level for best visual observation of the monitor screen. Please adhere to the following clearances to provide adequate ventilation:

Clearance	Surface
24"	Front
3"	Rear
2"	Sides
1.75"	Top and Bottom

Heat Dissipation

These monitors contain two very quiet fans, so no special physical mounting considerations are necessary regarding heat dissipation except under adverse conditions, provided the ambient temperature inside the mounting enclosure does not exceed 40°C (104°F). Adjacent devices can be rack mounted (or stacked) in proximity

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to the unit. If the temperature is above 104°F (40°C) allow an additional 1RU 1.75" (44.45mm) space above and below the unit for air circulation.

DC Power

The MPEG-3270 and MPEG-4290 require 24 VDC at 3 Amps. They cannot be harmed by accidental reverse connection of power.

On-Screen Display Features

Some of the monitor display features (Figure 1–1) can be rearranged on the screen as described in this section.

Figure 1–1   Display Features
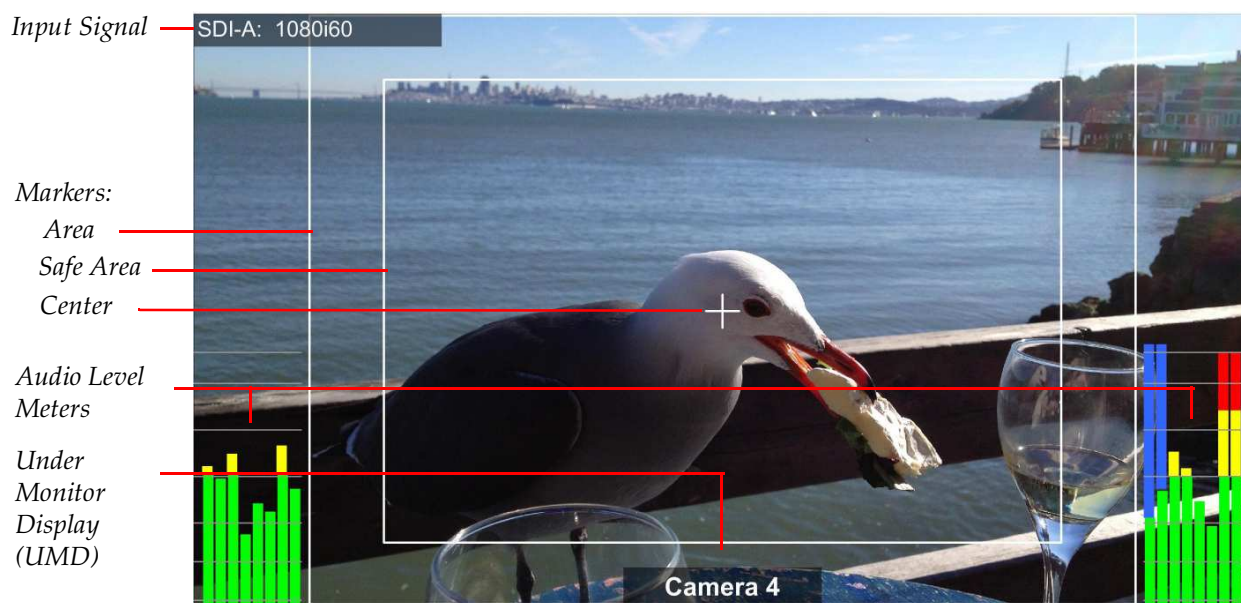
- **Input Signal:** The detected input signal type is displayed.

- **Area Marker**: By default the appearance of the **Area Marker** is controlled by the **F1** button. Refer to F1 - F6 Buttons on page 26. The Area marker can be shown in different aspect ratios using the **Marker Menu**. Refer to the Marker Menu on page 35.

- **Safe Area Marker**: By default the appearance of the **Safe Area Marker** is controlled by the **F1** button. Refer to F1 - F6 Buttons on

page 26. Safe areas, ranging from 80% to 95%, are available from the **Marker Menu**. Refer to the Marker Menu on page 35.

- **Center Marker**: By default the appearance of the **Center Marker** is controlled by the **F1** button. Refer to F1 - F6 Buttons on page 26.

- **Audio Levels:** By default the appearance of the **Audio Level Meters** is controlled by the **F2** button. Refer to F1 - F6 Buttons on page 26. Levels for the selected audio channels can be displayed on up to 16 meters evenly divided between the right and left sides of the monitor screen.

- **UMD:** The UMD Options Menu on page 36 provides settings to customize the UMD (Under Monitor Display) text area to show a line of up to 16 characters.

Front Panel

The front panel feature descriptions below refer to Figure 1–2, Figure 1–3, Figure 1–4 on page 7, and Figure 1–5 on page 8.

Figure 1–2   MPEG-3270 Front Panel Overview

Tally Lights

Headphone Jack *USB Port*

Speakers
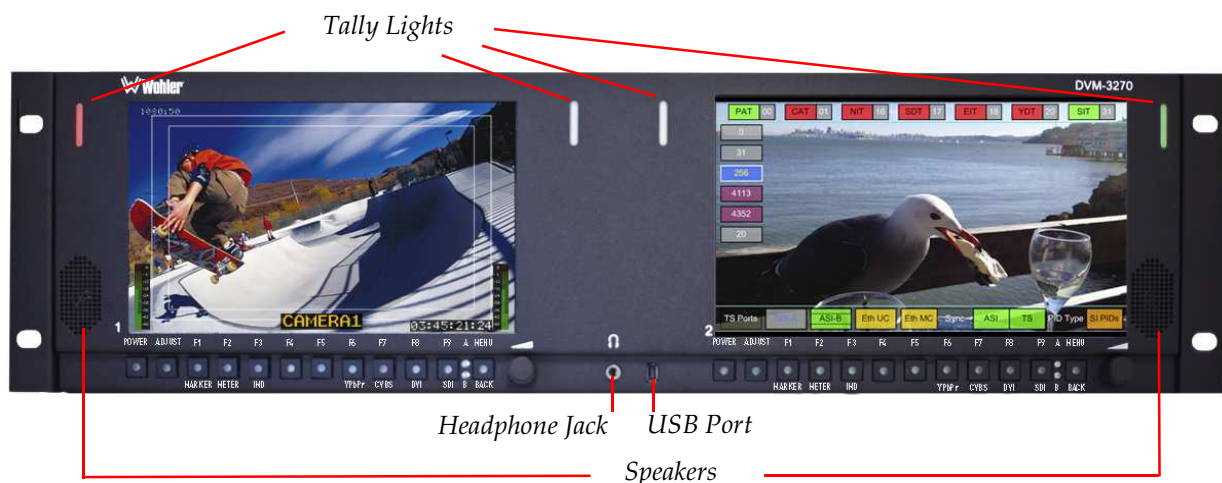
- **Tally Lights**: These tri-color (red/green/amber) lights are controlled through the **Tally and GPI** connector on the rear of the panel. Note that the MPEG-3270 has two tally lights per screen, one on the left and one on the right. These lights work in tandem. The MPEG-4290 has only one tally light per screen.

- **Speakers**: Speakers on either side of the unit deliver sound from the selected video input. Pressing or turning the **Volume** control of a screen will automatically switch the audio in the speakers and headphones to the audio from that screen's selected audio channels.

- **Headphone Jack (Mini 1/8")**: This jack allows you to monitor the assigned left/right stereo audio channels with stereo headphones from this mini-stereo connector.

- **USB**: This port allows you to connect a flash drive to the MPEG-3270 or MPEG 4290 to upgrade the firmware.

Figure 1–3   MPEG-4290 Front Panel Overview
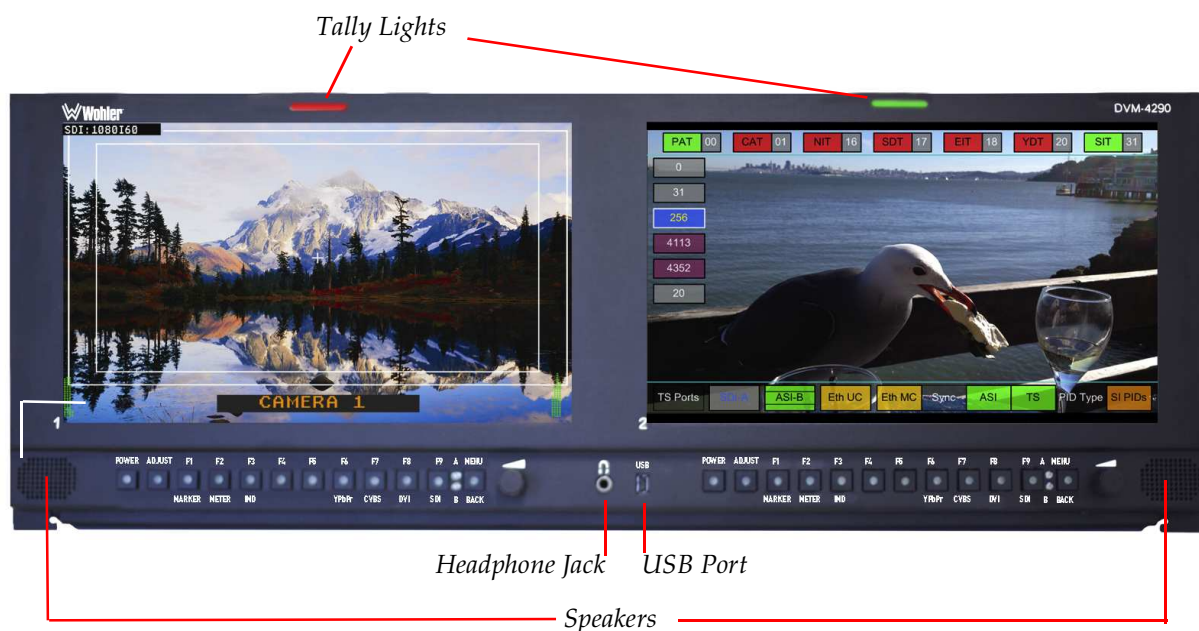
Figure 1–4   MPEG-3270 Screen Controls (One Set Per Screen)
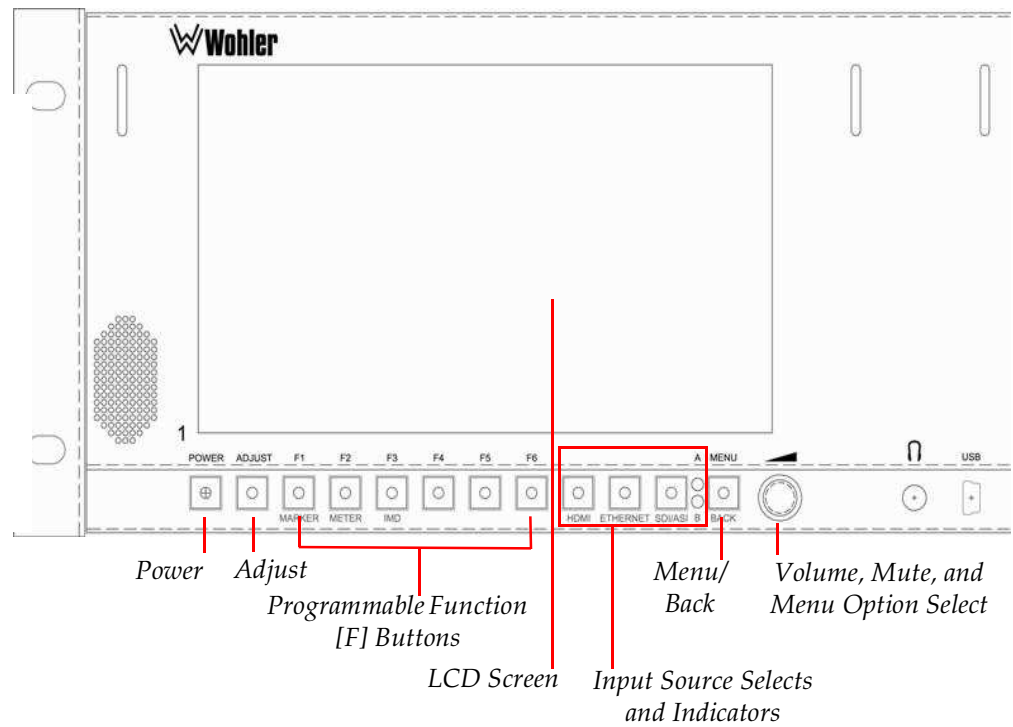
Figure 1–5   MPEG-4290 Screen Controls (One Set Per Screen)
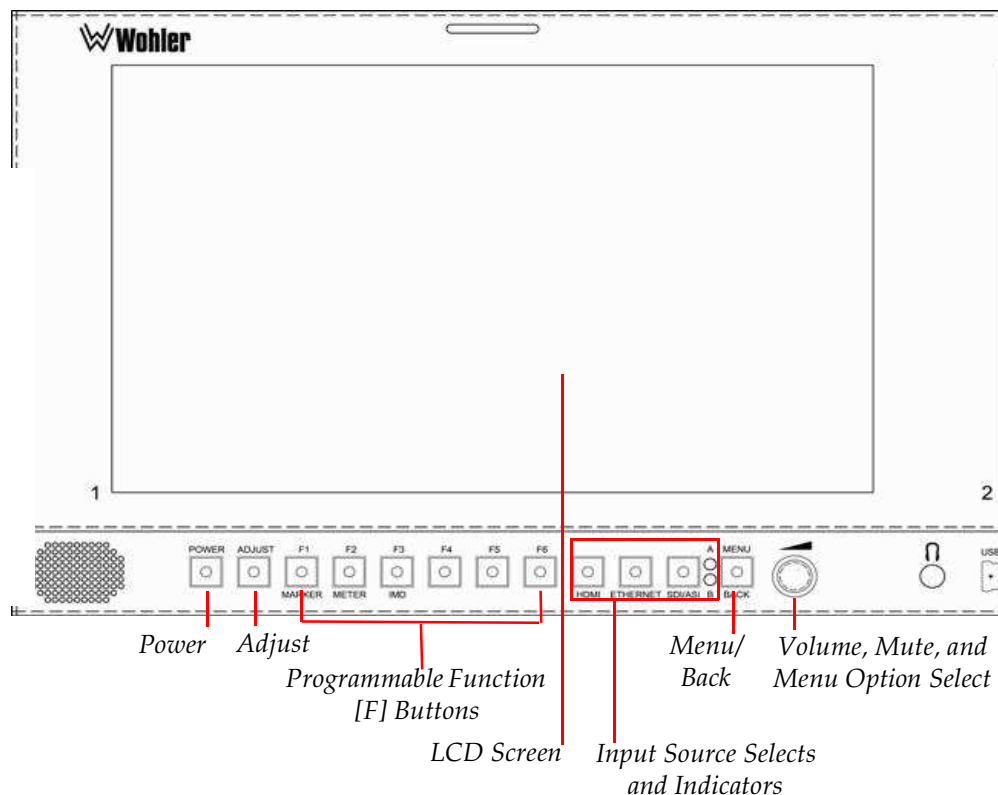
- **Power:** Each of the two **Power** buttons turns its associated LCD screen on and off. During startup, the power indicator blinks. When the display is ready, it will stop blinking and remain on. Note that it does take some time for each screen to power up. Refer to Power Buttons on page 22 for more information.

- **Adjust:** This button, in conjunction with the **Volume** control, allowing you to adjust a variety of video parameters. Refer to Adjust Settings on page 26 for more information.

- **F1 through F6:** The **F1-F6** buttons are programmable as hot keys for parameter adjustments. Refer to the Functions Menu on page 37 for more information. The default function for each button is as follows:

    - **F1** button is labeled **MARKER**. It will turn the Center, Area, and Safety markers on or off. Refer to the Marker Menu on page 35 to adjust the type and size of the markers.

    - **F2** button is labeled **METER**. It will turn the level meter display on or off. Refer to the Audio Menu on page 33 to control the scale and appearance of the meters.

- **F3** button is labeled **IMD**. It is planned in future software releases that this function button will, by default, control the appearance of IMD displays, however in the current software release, this button is unassigned.

- **F4** - **F6** buttons are unassigned, but may be easily assigned to control various functions. Refer to the Functions Menu on page 37.

- **HDMI:** Pressing this button lights its indicator and selects the HDMI input, deselecting the Ethernet and SDI/ASI inputs. Refer to the Status Menu on page 47 for details on setting the HDMI audio channels to monitor.

- **ETHERNET:** Pressing this button lights its indicator and selects the Ethernet input connection as the MPEG source, deselecting the HDMI and SDI/ASI inputs. Refer to MPEG Screen Operation on page 23 for further details.

- **SDI/ASI:** Pressing this button lights its indicator and selects the HDMI input, deselecting the Ethernet and HDMI inputs. It also toggles between the SDI input sources for each screen: **SDI-A** (SDI or ASI) and **SDI-B** (SDI or ASI). Selecting **SDI-A** is indicated by the **A** LED; selecting **SDI-B** is indicated by the **B** LED. Since these inputs can be more than one type, you must select the exact input type from the **System Menu**. Refer to the System Menu on page 42 for details.

- **Menu/Back:** Pressing the **Menu** button displays the **Main Menu**. Pressing it again returns you to the previous menu or to the **Main Screen** from the **Main Menu**. Refer to Using the Menu System on page 30 for more information.

- **Volume/Enter**: Rotating this knob when a menu is not displayed increases or decreases the audio volume of the selected video stream. Pressing or turning any **Volume** knob selects the audio of that screen for monitoring and mutes or unmutes the audio. The **Volume** knobs are also used to adjust options within the menu system.

- **LCD Screen:** The LCD screens display the selected video and OSD features. For MPEG video, they also display data and PID (packet identifier) tables and other useful information.

Rear Panel Connectors

The rear panels of the MPEG-3270 and the MPEG-4290 are very similar, except for rack unit height.

Figure 1–6   MPEG-3270 & MPEG-4290 Rear Panel
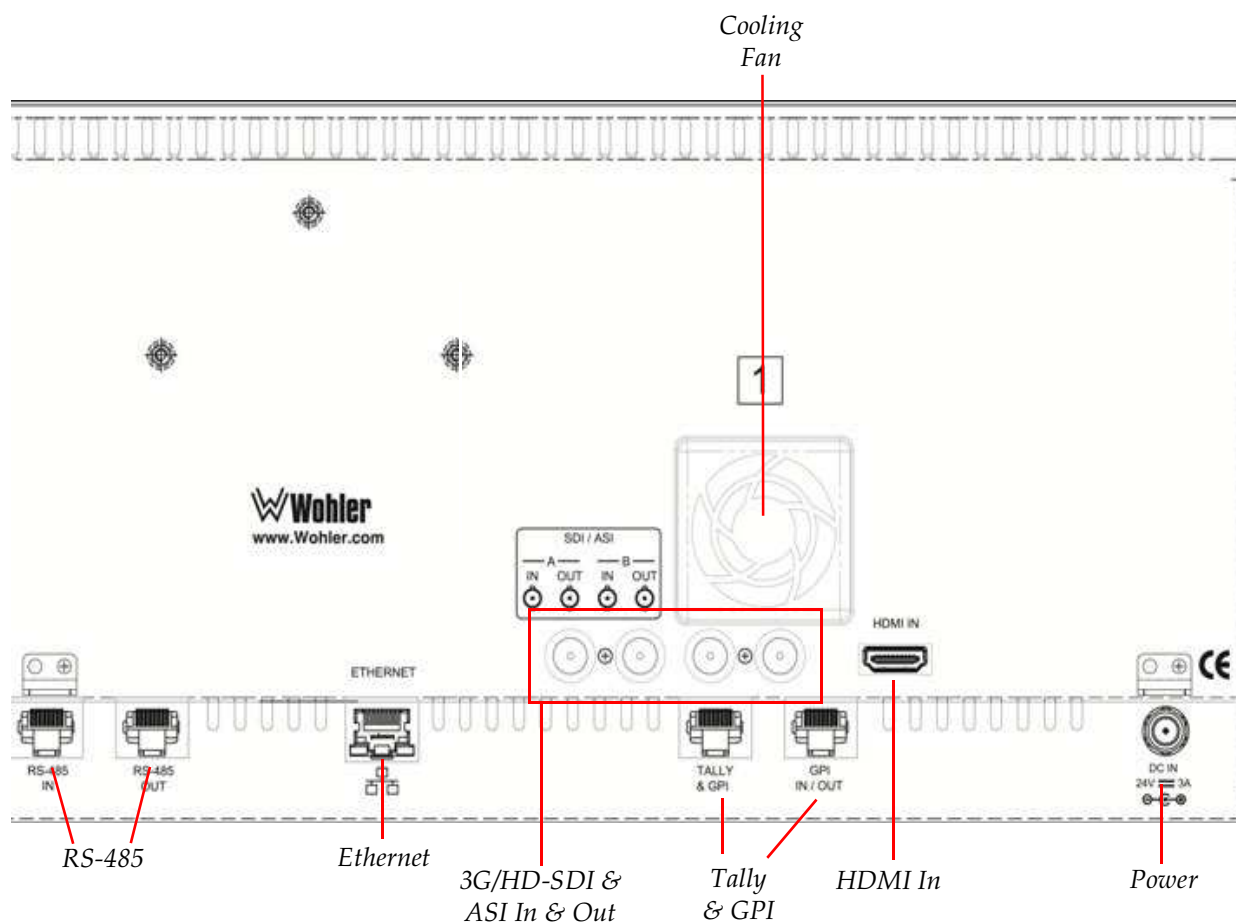
- **HDMI IN**: This connector accepts an HDMI signal for display. Select the HDMI input using the **HDMI** button on the front panel.

Note: This input does not support encrypted sources.

- **3G/HD-SDI or ASI I/O (A & B, BNCs)**: These input connectors accept standard 3G/HD-SDI or ASI MPEG video and audio. The system regenerates the 3G/HD-SDI or ASI signals from each SDI/ASI input before outputting them to these female BNC connectors. Select these inputs using the **SDI/ASI** button on the front panel.

- **RS-485 I/O (RJ-45)**: These two ports are used for UMD and tally remote control.

- **Ethernet (RJ-45)**: This connector is used for network communications and MPEG input to each of the two screens.

- **Tally and GPI (RJ-45)**: This 8-pin connector controls the tally lights on the front panel (2 pins) and allows remote control of the unit through the other five available pins. Refer to Figure 1–7 and Table 1–1 when making connections. Refer to the GPI-In Menu on page 39 to set up operation.

Figure 1–7   Tally & GPI-I/O RJ-45 Connector
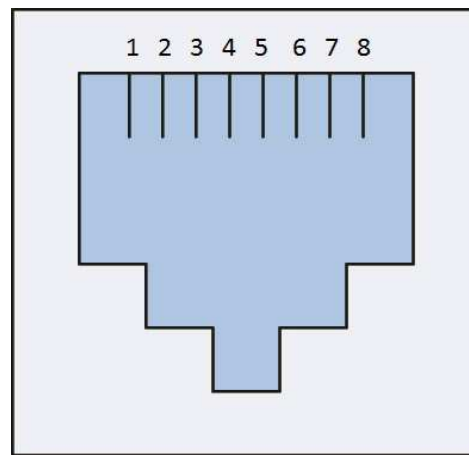
Table 1–1   Tally & GPI RJ-45 Pinout

Pin	Name	Function
1	Tally Red	Red Tally Signal
2	Tally Green	Green Tally Signal
3	GPI-In 3	General Purpose Input 3
4	GPI-In 4	General Purpose Input 4
5	Gnd	Ground Return for signals on all other pins
6	GPI-In 5	General Purpose Input 5
7	GPI-Out 7	General Purpose Output 7 (future release)
8	GPI-Out 8	General Purpose Output 8 (future release)

Note: For a **Yellow Tally**, activate both the **Red Tally** and **Green Tally Signal** inputs.

Important: A signal input is defined to be a dry contact closure to ground for the **General Purpose Inputs** as well as for the **Tally LED**s. <u>**Do not apply any voltages to these inputs**</u>.

- **Cooling Fan**: Please do not obstruct the airflow from these two quiet fans.

- **Power (DC)**: To provide power to the unit, attach the supplied 100 to 240VAC power supply, which will supply 24VDC to this connector.

Quick Start

Introduction

Overview

This pictorial guide will show you how to unpack and operate the MPEG-3270 and MPEG-4270 for the first time.

Topics

Unpacking

Packing List

1. One MPEG-3270 or MPEG-4290 Monitor

2. One 24V 3.0A External Power Supply

3. One IEC Standard Power Cord

4. One MPEG-3270 & MPEG-4290 User Guide (may be on CD-ROM)

Unpacking and Powering for the First Time

1. Take the MPEG-3270 or MPEG-4290 unit out of the box, and install it into a rack or set it on a table during initial set up.

2. Unpack the external power supply and the IEC cord:

3. Plug the IEC power cord into the external power supply and then plug the cord from the external power supply into the connector on the back panel of the MPEG-3270 or MPEG-4290.

4. After connecting the power cords, you should see the A and B indicators below each screen light up. Press the **Power** button located at the left under each screen.

5. For 30 seconds, the **Power** indicators should flash. Then the screens should show a progress bar, followed by some white flashes and a splash screen showing the MPEG Series product line. The start up process takes just over a minute. When the start up process is complete, you should see the words, "SDI-A: No Sync" at the upper left of the screen, assuming that no SDI signal is in fact present.

6. Proceed to Monitoring a 3G/HD-SDI Signal on page 15, Monitoring an ASI Stream on page 16, Monitoring an Ethernet Stream on page 18, or Monitoring an HDMI Signal on page 19, depending upon your monitoring needs.

Setting up Inputs

Monitoring a 3G/HD-SDI Signal

1. Press the **Menu** button to open the **Main Menu**. Rotate the **Volume** knob to highlight the **System Menu** selection and press it to enter the **System Menu**.
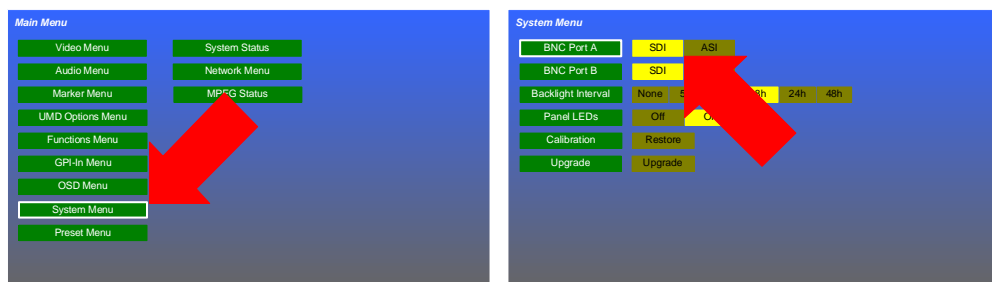
2. The **SDI** option should already be selected by default on **BNC Ports A** & **B**. If it is not set this way, it can be changed by pressing the **Volume** knob once and then turning it to move the selector on **BNC Port A** to **SDI**. Press the **Volume** knob once to select **SDI**. Use the same process for **BNC Port B** if you intend to connect an SDI signal to **SDI/ASI Input B**. Finally press the **Menu** button twice to exit.

3. If it is not connected already, connect the SDI source to **SDI/ASI A IN**. Press the **SDI/ASI** button repeatedly to light the **A** LED. **SDI A:** will be indicated in the upper left corner of the screen.

4. When the SDI signal is recognized, it will appear on the screen.

Monitoring an ASI Stream

1. Press the **Menu** button to open the **Main Menu**. Rotate the **Volume** knob to highlight the **System Menu** selection and press it to enter the **System Menu**.

2. Turn the **Volume** knob to **BNC Port A** and press it once. Now turn it again to select **ASI**. Press the **Volume** knob once to select **ASI**. Use the same process for **BNC Port B**, if you will be connecting a second **ASI** stream to **SDI/ASI B IN**. Finally press the **Menu** button twice to exit.

3. If it is not connected already, connect the ASI source to **SDI/ASI A IN**. Press the **SDI/ASI** button repeatedly to light the **A** LED. **ASI A:** will be indicated in the upper left corner of the screen:

4. When you see **ASI-A:TSSync** in the upper left corner of the screen, the signal has been recognized.

5. Press the **Menu** button to open the **Main Menu**. Rotate the **Volume** knob to highlight the **MPEG Screen** selection and press it to enter the **MPEG Screen.** In the **MPEG Screen**, turn the **Volume** knob to highlight the PID to view and then press to select.

6. This will proceed to the next menu where you can select the video and audio PIDs. Turn the **Volume** knob to the video and audio PIDs of interest and press to select them. When selected, they are bright green. When you have selected the audio and video PIDs, turn the **Volume** knob to highlight **SEL and Exit** at the lower left of the screen. Press the **Volume** knob to return to the **MPEG Screen**.
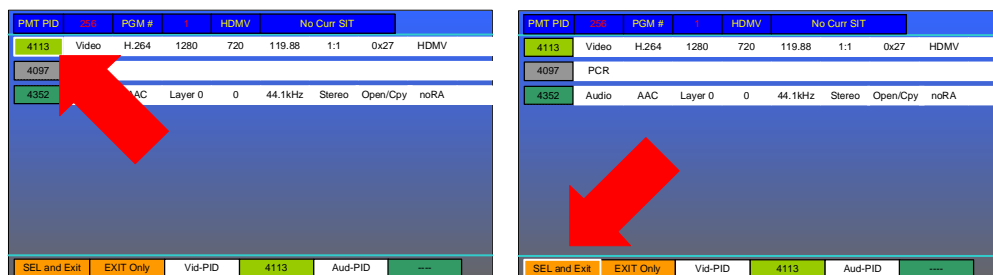
7.   After a few seconds, the video should appear with the **MPEG Screen** superimposed over it. If you prefer, you may remove the superimposed **MPEG Screen** by pressing the **Menu** button twice.

Note: This input does not support encrypted sources.

Monitoring an Ethernet Stream

1.   Connect the Ethernet plug to the **ETHERNET** jack on the back panel of the MPEG-3270 or MPEG-4290. The one jack will serve all four screens.

2.   Press the **Menu** button to get to the **Main Menu**. Rotate the **Volume** knob to highlight the **Network Menu** selection. Press the **Volume** knob once to enter the **Network Menu**.
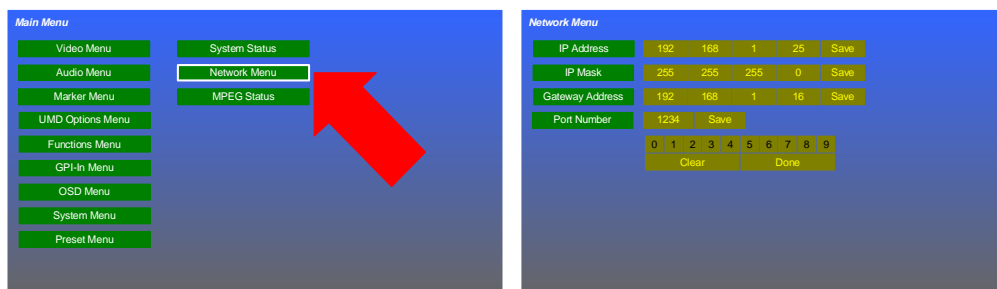
3.   Rotate the **Volume** knob to each IP setting you need to change. Press and turn the knob to make the changes. Press the **Volume** knob to exit this menu into the **Main Menu** and then press it again to exit the **Main Menu**.

4.   Follow step 5 on page 17 through step 7 in the Monitoring an ASI Stream section.

5.   Press the **Menu** button twice to exit both the **MPEG Screen** and the **Main Menu**. Press the **Ethernet** button. **ETHUC:** will appear in the upper left corner of the screen. After a few seconds, the video should appear. If you prefer, you may superimpose the

MPEG Screen over the picture by pressing the **Menu** button, followed by selecting the **MPEG Screen** with the **Volume** knob.

Note: This input does not support encrypted sources.

Monitoring an HDMI Signal

1. Connect the HDMI source plug to the **HDMI IN** jack on the back panel for that screen as shown in Figure 1–6 on page 10.

2. Press the **HDMI** button. **HDMI:** will appear in the upper left corner of the screen. After a few seconds, the video should appear.

Note: This input does not support encrypted sources.

CHAPTER 3
Operation

Introduction

Overview

This chapter describes how to operate your MPEG-3270 or MPEG-4290.

Topics

Initially Powering

When the MPEG-3270 or MPEG-4290 is powered for the very first time, it will look to the **SDI-A** input as its source. Thereafter, it will power up with the input that was selected when it was last powered down.

Power Buttons

There is an individual **Power** button per screen and each may be powered on or off individually. A single press of the **Power** button starts the power on sequence, which will take approximately 65 seconds. During this time, the **Power LED** will blink. For the first 30 seconds, there will be no indication on the screen, but thereafter, various progress bars and startup screens will appear. When the **Power LED** is lit steadily, the power on sequence is complete.

To power a screen down, hold the **Power** button for 4 seconds. The screen will turn off, as will the **Power LED**. The 4 second delay is intended to prevent accidentally turning off a screen while it is in use.

Optionally, the Optionally, the Panel LEDs can be set so that they aren't lit when the MPEG-3270 or MPEG-4290 is in operation. This can be useful in dark environments. Refer to the **Panel LED** option in the .

Input Buttons

The three **Input** buttons allow quick selection of the various inputs.

HDMI Button

Pressing this button selects the **HDMI** connection on the back panel as the signal source. When this is selected, the green LED within the **HDMI** button glows. To learn how to set up the HDMI audio channels to be monitored, refer to the .

Ethernet

Pressing this button will display UDP MPEG transport streams received via the **Ethernet** connection on the back panel. When this is selected, the green LED within the **Ethernet** button glows. To learn how to set up the Ethernet connection to receive a stream, refer to the Network Menu on page 45.

SDI/ASI

This button is used in conjunction with the **BNC Port A** and **BNC Port B** selections in the System Menu on page 42. Pressing the **SDI/ASI** button repeatedly selects order:

1. **BNC Port A**: This can be either a 3G/HD-SDI signal or an ASI signal, as selected in the System Menu on page 42. When **Port A** is selected, the **A** LED lights.
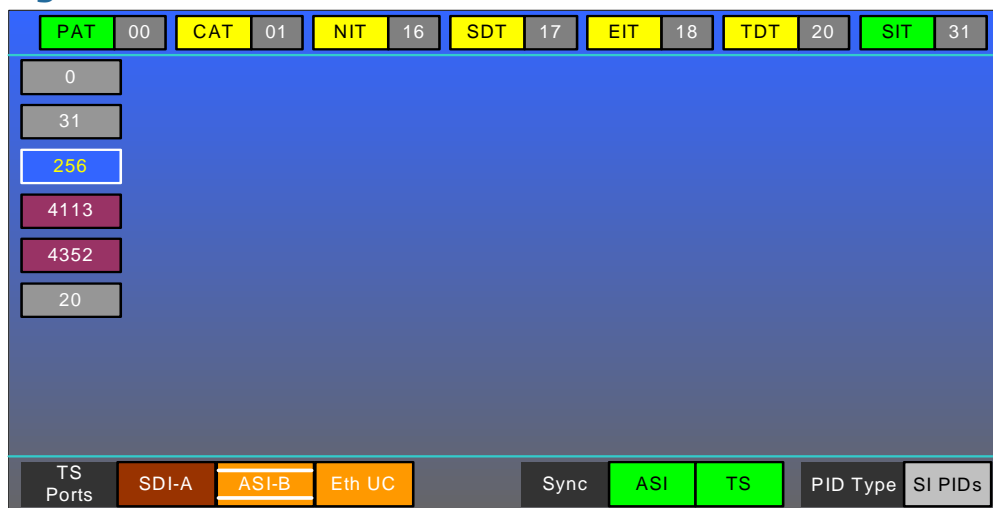
2. **BNC Port B**: This can be either a 3G/HD-SDI signal or an ASI signal, as selected in the System Menu on page 42. When **Port B** is selected, the **B** LED lights.

MPEG Screen Operation

The **MPEG Screen** is accessed through the Menu System, using the **MPEG Menu** selection.

The **MPEG Screen** appears as follows:

Figure 3–1   MPEG Screen

This screen is used to monitor and make selections from the MPEG transport stream. In the **MPEG Screen**, the **Volume** knob can be rotated and pressed to access the following items:

1. **PID Type**: The **PID Type** (Program or Packet Identification Type) offers a choice of **SI** (Service Information) PIDs or **PMT** (Program Map Table) PIDs. Rotate the **Volume** knob to select **SI PIDs** or **PMT PIDs** and then press. This will proceed to the **SI PIDs Screen** (shown in Figure 3–2 on page 25) or the **PMT PIDs Screen** (shown in Figure 3–3 on page 25), respectively.

2. **TS Ports**: These The **TS Ports** (Transport Stream Ports) indicators show the selection you made using the **SDI/ASI Input** button. The choices will vary according to what input signals are present. The selected port will be bright orange and the other choices will be dark.

3. **Sync**: These indicators will either be green for a good signal or yellow if the expected sync signal isn't found.

4. **PID Selection**: Rotate the **Volume** knob to select the PID of interest and then press.

5. **Status Indicators**: The **Status Indicators** across the top of the MPEG Screen offer a quick go/no go indication of the following MPEG parameters: **PAT** (Program Association Table), **CAT** (Conditional Access Table), **NIT** (Network Information Table), **SDT** (Service Description Table), **EIT** (Event Information Table), **TDT** (Time and Date Table), and **SIT** (Selection Information Table). A green color indicates that there is no problem and a

yellow indicator is shown for any parameters not present in the stream.

Select the DVB-ASI input using the front panel input select push-button. Stream sync is indicated in the upper left corner of the monitor. This will enable the MPEG menu and the PID that will be captured in stream. The **PID** table menu displays the PIDs in stream. The **PAT** (Program Association Table) menu displays the programs in stream. Select the program number and the **PMT** information is displayed. Select the video/audio to decode.

Figure 3–2   SI PID Screen

SIT	31	0x7f

PrgNum	Service	Svc Dest	Svc Type
0		No Curr SIT	

Push to Exit

The **SI PID Screen** in Figure 3–2 shows the service information for each program number. To exit the screen, press the **Volume** knob.

Figure 3–3   PMT PID Screen

PMT PID	256	PGM #	1	HDMV	No Curr SIT

4113	Video	H.264	1280	720	119.88	1:1	0x27	HDMV
4097	PCR							
4352	Audio	AAC	Layer 0	0	44.1kHz	Stereo	Open/Cpy	noRA

SEL and Exit	EXIT Only	Vid-PID	4113	Aud-PID	----

The **PMT PID Screen** in Figure 3–3 on page 25 shows detailed information for the selected audio and video program map table PID. Rotate the **Volume** knob to highlight the PMT PID of interest and press it. The rotate the **Volume** knob and then press to select either **SEL and Exit** to select that PMT PID and exit this screen and return to the **MPEG Screen**, or select **EXIT Only** to exit this screen with no changes.

IMPORTANT: If a PMT PID row is highlighted in bright pink, this lets you know that the stream is encripted (scrambled). This product by design is not intended to monitor these streams, so do not attempt to select one.

F1 - F6 Buttons

Your choice of options can be accessed directly using the function buttons. The option or options that each button controls is set in the Functions Menu on page 37. By default from the factory, the **Function** buttons are set up as follows:

F1: By default, the **F1** button will control three options: Whether the **Center** marker appears, whether the **Area** marker appears, and whether the **Safety** marker appears.

F2: By default, the **F2** button will control whether the audio **Level Meters** appear on the screen.

F3 - F6: By default, the **F3 - F6** buttons are undefined.

Pressing the **F1** through **F6** buttons will light its green indicator, showing that the option or options are in effect. Pressing the button again removes the option or options, extinguishing the indicator.

Adjust Settings

Certain commonly accessed adjustments are accessed fairly directly by pressing the **Adjust** button, lighting the green indicator in the button. When this indicator is lit, the **Volume** knob is re-purposed to adjusting the settings that follow. Pressing the **Adjust** button a second time exits the menu, extinguishing the button's indicator, as does the expiring of the **OSD Time-out** set in the OSD Menu on page 41. After pressing the

Adjust button, the first item in the following list appears on the screen for adjustment. Pressing the **Volume** knob switches to each successive item:

1. **Backlight**: Rotate the **Volume** knob to adjust the screen brightness on a scale of 15% to 100%.

2. **Video Blend**: Rotate the **Volume** knob to adjust the transparency of the on-screen displays and menus on a 30% to 100% scale.

3. **Contrast**: Rotate the **Volume** knob to adjust the video contrast on a 40% to 100% scale.

4. **Red**: Rotate the **Volume** knob to adjust the red level on a -128 to 127 scale.

5. **Blue**: Rotate the **Volume** knob to adjust the blue level on a -128 to 126 scale.

6. **Saturation**: Rotate the **Volume** knob to adjust the video saturation on a 0% to 100% scale.

7. **Gamma**: Rotate the **Volume** knob to adjust the video gamma on a 0 to 10 scale. On this scale, 1 implies a 10% application of the gamma set in the **Video Menu**, while 9 implies a 90% application.

8. **Black Level**: Rotate the **Volume** knob to adjust the black level on a 0 to 16 scale.

9. **Panel LEDs**: Rotate the **Volume** knob to adjust the brightness of the panel LEDs on a 0 to 15 scale. This function on each of the screens works in common on all four of the screens.

Screen Saver

In order to prolong the life of the displays, a Backlight Timeout Interval is provided. Refer to the **Backlight Interval** item in the System Menu on page 42. The default setting is 8 hours. After 8 hours passes with no button presses or knob turns, the MPEG-3270 or MPEG-4290 will dim its screens. Pressing any button or turning any knob will bring the MPEG-3270 or MPEG-4290 back to normal operation.

Saving Your Options

When power is switched off or otherwise lost, the current option settings in the MPEG-3270 or MPEG-4290 are preserved and are still in effect when power is restored. In addition, 6 option memories or **Presets** for each screen are provided for you to save various configurations to be later recalled. Refer to the Preset Menu on page 43. You may also copy these **Presets** from screen to screen.

Sometimes you may want to erase the option settings you have made in any **Preset** and restore it to the default options that the MPEG-3270 or MPEG-4290 was originally provided with. To do this, go to the **Preset Menu** in the screen you want to restore and use the following steps:

1. Within the **Preset Menu**, turn the **Volume** knob to the **Recall Preset** item. If the **Preset** you want to restore is already highlighted, skip to Step 3.

2. Press the **Volume** knob, then turn it to the number of the **Preset** you want to restore and press it again. The **Preset** will recall and highlight.

3. Press the **Volume** knob, then turn it to the **Factory** selection and press it again. The current settings as well as those in the selected **Preset** will instantly return to their original default settings.

CHAPTER 4
Configuration

Introduction

Overview

This chapter describes how to use the menu system to configure your MPEG-3270 or MPEG-4290.

Topics

Using the Menu System

The Menu System consists of a tree of menus which list the various options and setting that can be customized for your use. The Menu Tree is shown in Figure 4–1.

Figure 4–1   **MPEG-3270 & MPEG 4290 Menu Tree**
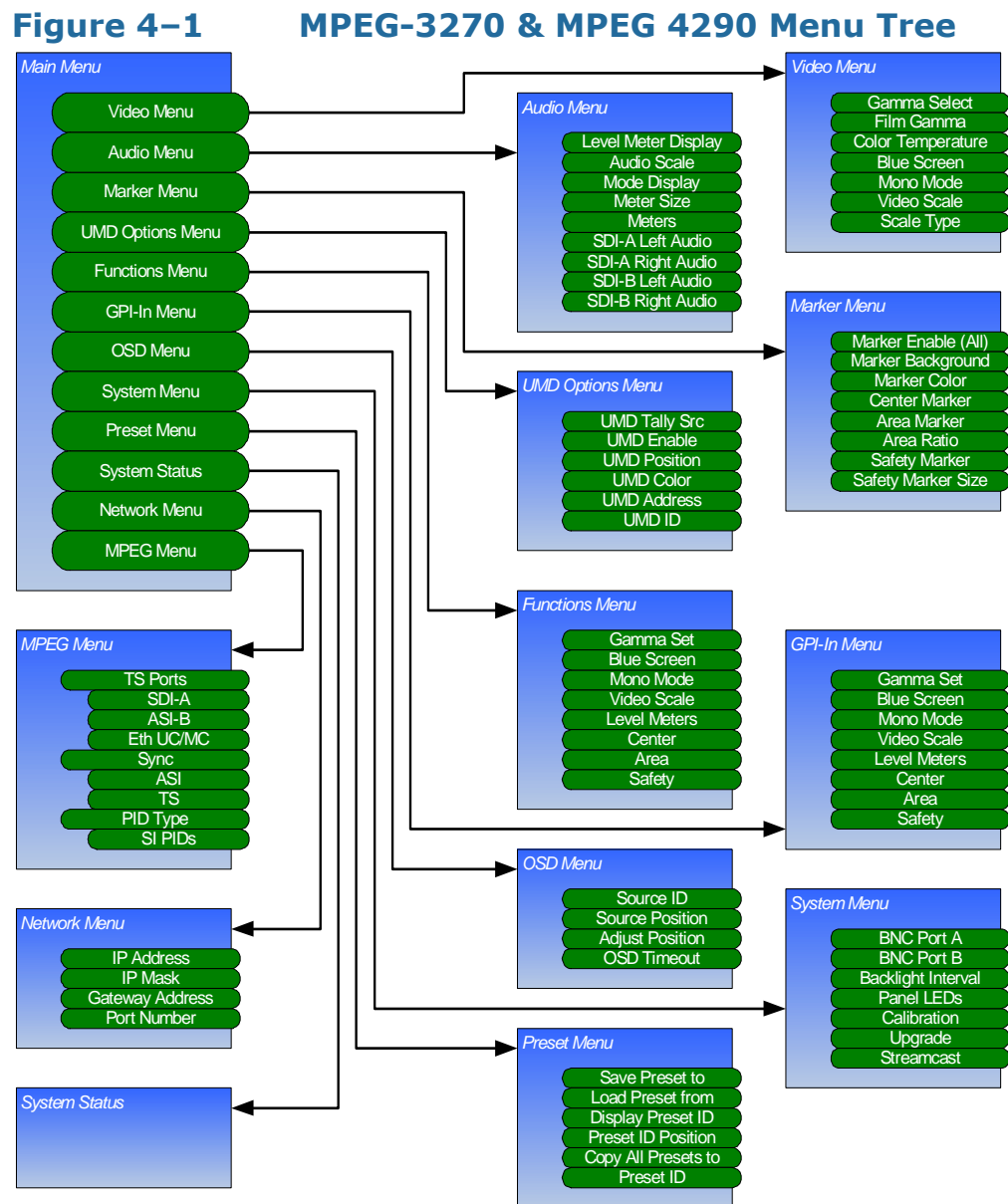
Pressing the **Menu** button enters the **Menu System**. The first menu that you see is the **Main Menu**. Most of the other menus can be accessed from the **Main Menu**, which appears as shown in Figure 4–2 on page 31.

Figure 4–2   Main Menu

Rotate the **Volume** knob to highlight the menu you want and then press to enter it. In this or any menu, press the **Menu/Back** button to back out of the menu or the particular selection within that menu. The menus are described on the following pages.

Video Menu

This menu customizes the video display. The **Video Menu** is shown in Figure 4–3.

Figure 4–3   **Video Menu**

Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1. **Gamma Select**: Selecting **Uncorrected** effectively sets a gamma of **1.0**. Selecting **Film** sets gamma to the value chosen in the **Film Gamma** selection of this menu. Selecting **GPI** will allow a GPI input, as set in the GPI-In Menu on page 39, to select whether **Uncorrected** or **Film** is in effect.

2. **Film Gamma**: A selection of values is presented. The chosen value will be used when **Gamma Select** is set to **Film**. **2.2** is the default.

3. **Color Temperature**: Selections from warm to cool are provided. **D65** is the default.

4. **Blue Screen**: **Off** is the default selection. Selecting **On** disables the red and green colors for alignment purposes. Selecting **GPI** will allow a GPI input, as set in the GPI-In Menu on page 39, to select whether **Off** or **On** is in effect.

5. **Mono Mode**: **Off** is the default selection and enables the color video display. Selecting **On** will display only monochrome video.

Selecting **GPI** will allow a GPI input, as set in the GPI-In Menu on page 39, to select whether **Off** or **On** is in effect.

6.   **Scale Type**: **Zoom** is the default selection. It will enlarge the image, keeping its aspect ratio, until both the vertical and horizontal edges reach or surpass the edges of the screen. Selecting **Stretch** will enlarge both the vertical and horizontal dimensions to reach the edge of the screen, without preserving the aspect ratio.

Audio Menu

This menu sets up the audio level meters that can appear on the display and also defines which audio channels you will hear. The **Audio Menu** is shown in Figure 4–4

Figure 4–4   Audio Menu
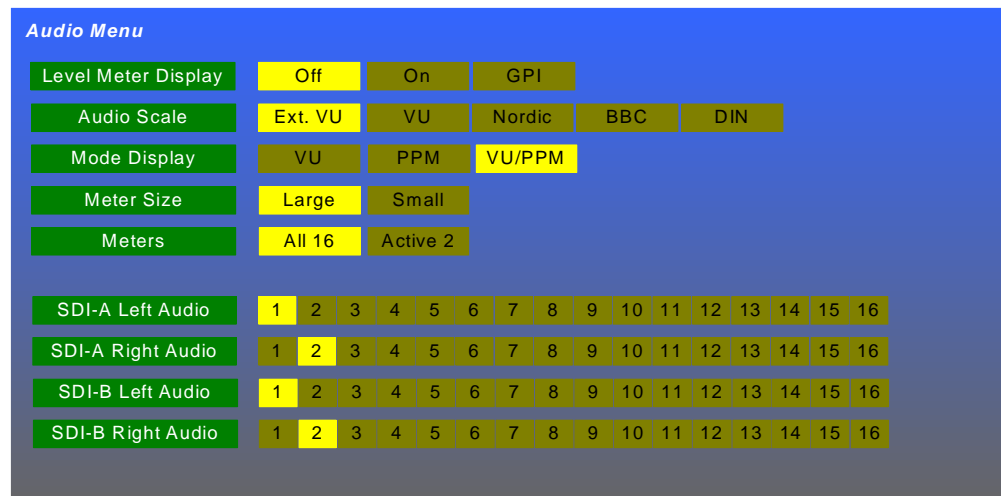
Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1.   **Level Meter Display**: Selecting **On** causes audio level meters to appear on the screen. Selecting **Off** causes them to disappear. Either 2 or 16 meters will appear, as defined by the **Meters** option in this menu. Selecting **GPI Control** will allow an external GPI input, as set in the GPI-In Menu on page 39, to select whether the audio meters appear or not. The default is **On**.

2. **Audio Scale**: One of five audio scales for the level meters may be selected.

    - Extended VU

    - VU
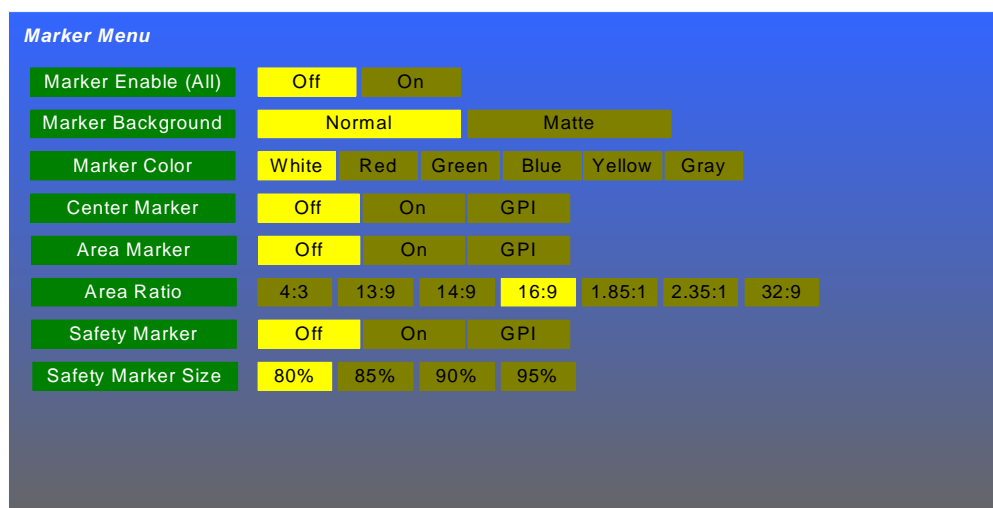
    - Nordic

    - BBC

    - DIN

    The default is **Extended VU**.

3. **Mode Display**: The type of level metering can be chosen. **VU/ PPM** is the default, causing both the average and peak levels to be displayed simultaneously. Optionally, **PPM** (peak) and **VU** (average) can be selected to display individually.

4. **Meter Size**: Larger meters are easier to see, but cover up more of the video display. The default selection is **Large**. A **Small** (narrower, but same height) selection is available.

5. **Meters**: By default, the **All 16** selection will allow all 16 channels within an SDI signal to display, with channels 1 – 8 on the left of the screen and channels 9-16 on the right of the screen. Optionally, **Active 2** can be selected to allow only the two channels that are selected for listening to display. The two channels will appear in the same position that they would have been in if 16 channels were displayed.

6. **SDI-A Left Audio**: This option allows you to choose the channel to be heard in the left speaker or headphone when the SDI-A input is picked. By default, channel **1** is selected.

7. **SDI-A Right Audio**: This option allows you to choose the channel to be heard in the right speaker or headphone when the SDI-A input is picked. By default, channel **2** is selected.

8. **SDI-B Left Audio**: This option allows you to choose the channel to be heard in the left speaker or headphone when the SDI-B input is picked. By default, channel **1** is selected.

9. **SDI-B Right Audio**: This option allows you to choose the channel to be heard in the right speaker or headphone when the SDI-B input is picked. By default, channel **2** is selected.

Marker Menu

This menu defines if and how markers will appear on the screen. The **Marker Menu** is shown in Figure 4–5.

Marker Menu					
Marker Enable (All)	Off	On			
Marker Background	Normal	Matte			
Marker Color	White	Red	Green	Blue	Yellow	Gray
Center Marker	Off	On	GPI		
Area Marker	Off	On	GPI		
Area Ratio	4:3	13:9	14:9	16:9	1.85:1	2.35:1	32:9
Safety Marker	Off	On	GPI		
Safety Marker Size	80%	85%	90%	95%		

Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1. **Marker Enable (All)**: Selecting **On** causes any markers set up in this menu to appear on the screen. Selecting **Off** will not allow any markers to display. The default is **Off**.

2. **Marker Background**: By default the **Normal** choice is selected, which means that the background is transparent, allowing the video to display normally. **Matte** represents a future feature.

3. **Marker Color**: The color of the markers can be one of six choices. By default the **White** choice is selected.

4. **Center Marker**: The center marker may be turned **On** or **Off**. Selecting **GPI** control will allow an external GPI input, as set in the GPI-In Menu on page 39, to select whether the **Center Marker** appears or not. The default is **Off**.

5. **Area Marker**: The area marker may be turned **On** or **Off**. The aspect ratio of the **Area Marker** is as selected in the **Area Ratio** option in this menu. Selecting **GPI** control will allow an external

GPI input, as set in the GPI-In Menu on page 39, to select whether the **Area Marker** appears or not. The default is **Off**.

6. **Area Ratio**: Seven choices of **Area Marker** aspect ratio are offered. By default the **16:9** ratio is chosen.

7. **Safety Marker**: The area marker may be turned **On** or **Off**. The size of the **Safety Marker** is as selected in the **Safety Marker Size** option in this menu. Selecting **GPI** control will allow an external GPI input, as set in the GPI-In Menu on page 39, to select whether the **Safety Marker** appears or not. The default is **Off**.

8. **Safety Marker Size**: Seven choices of **Safety Marker Size** are offered. By default the **80%** size is chosen.

UMD Options Menu

This menu lets you set how the UMD (Under Monitor Display) is sourced and how it appears. The **UMD Options Menu** is shown in Figure 4–6.
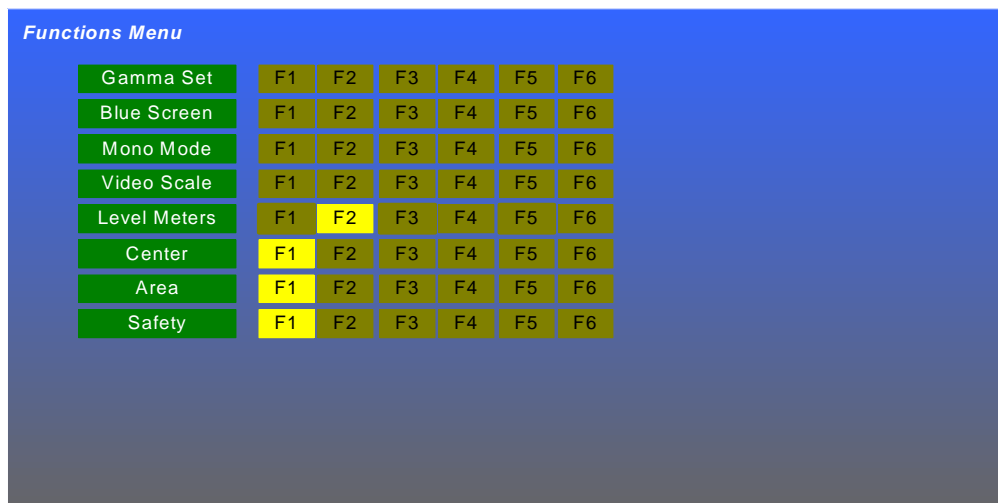
Figure 4–6   **UMD Options Menu**
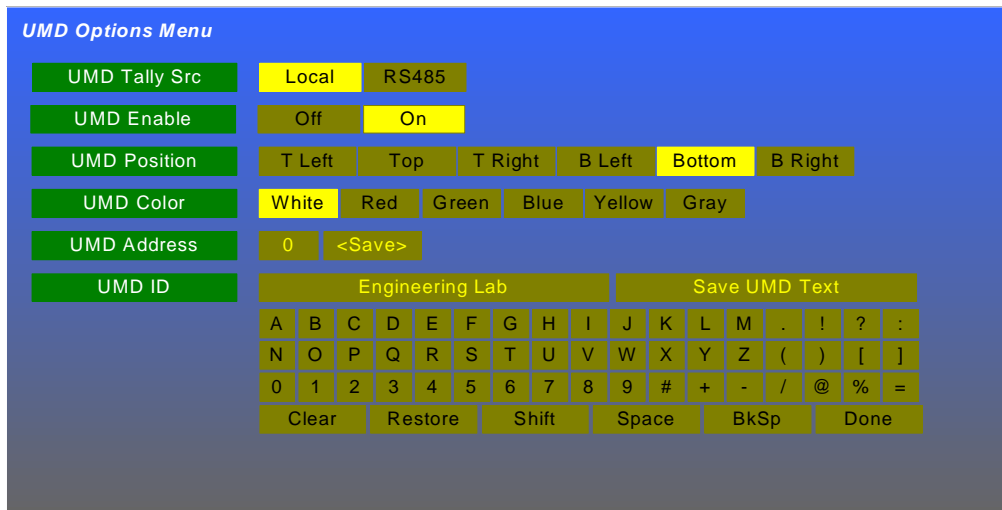
Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1. **UMD Tally Src**: The text of the UMD Tally may be set to **Local** to display the text set in the **UMD ID** section of this menu or it may be set to **RS485** so that it may be received from the RS485 interface on the back panel. The tally protocols supported are TSL 3.1 and 4.0. Selection between them is automatic. The default setting is **Local**.

2. **UMD Enable**: By default, this option is set to **On**, allowing the UMD set up by this menu to appear on the screen. Selecting **Off** will prevent the UMD from appearing.

3. **UMD Position**: The UMD may be displayed at one of six locations on the screen. By default, the **Bottom** location is selected.

4. **UMD Color**: The color of the of the UMD can be one of six choices. By default, the **White** choice is selected.

5. **UMD Address**: The numeric keys of the on-screen keypad can be used to set the UMD address 0 - 127. To enter the address, first press the **Volume** knob one more time and then rotate it to highlight each number and the press it to add that number to the address. **Clear**, **Restore**, **Shift**, **Space**, **Backspace**, and **Done** controls are also provided. Up to 3 digits may be entered. When you are finished, select **Done**. <**Save>** will then be highlighted. To save, press the **Volume** knob one more time. To abandon the text you entered, press the **Menu** button.

6. **UMD ID**: An on-screen keypad is provided to use to enter the local UMD text. To enter text, rotate the **Volume** knob to highlight each character and the press it to add that character to the text. **Clear**, **Restore**, **Shift**, **Space**, **Backspace**, and **Done** controls are also provided. Up to 16 characters may be entered. When you are finished, select **Done**. **Save UMD Text** will then be highlighted. To save the text, press the **Volume** knob one more time. To abandon the text you entered, press the **Menu** button.

Functions Menu

This menu programs the action of the **F1** through **F6** function buttons on the front panel. Each function button serves as a hot key to control one or more functions, as desired. The **Functions Menu** is shown in Figure 4–7.

Figure 4–7   Functions Menu

Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1. **Gamma Set**: The gamma parameters are described in the Video Menu on page 32. The **F1** through **F6** buttons may control whether gamma is set to **Uncorrected** or **Film**. By default, neither function button controls this.

2. **Blue Screen**: **Blue Screen** is described in the Video Menu on page 32. The **F1** through **F6** buttons may control whether the blue screen is set to **On** or **Off**. By default, neither function button controls this.

3. **Mono Mode**: Monochrome mode is described in the Video Menu on page 32. The **F1** through **F6** buttons may control whether monochrome mode is set to **On** or **Off**. By default, neither function button controls this.

4. **Video Scale**: Video scaling is described in the **Scale Type** option on the Video Menu on page 32. The **F1** through **F6** buttons may control whether the scale type is set to **Zoom** or **Stretch**. By default, neither function button controls this.

5. **Level Meters**: The audio level meter parameters are described in the Audio Menu on page 33. The **F1** through **F6** buttons may control whether the level meters show on the screen or not. By default, function button **F2** controls this.

6. **Center**: The **Center Marker** enable is described in the Marker Menu on page 35. The **F1** through **F6** buttons may control whether the center marker shows on the screen or not. By default, function button **F1** controls this.

7. **Area**: The **Area Marker** enable is described in the Marker Menu on page 35. The **F1** through **F6** buttons may control whether the area marker shows on the screen or not. By default, function button **F1** controls this.

8. **Safety**: The **Safety Marker** enable is described in the Marker Menu on page 35. The **F1** through **F6** buttons may control whether the safety marker shows on the screen or not. By default, function button **F1** controls this.

GPI-In Menu

This menu programs the action of the GPI (General Purpose Interface) inputs. The pin numbers of each input (as well as the other pins on the GPI connector) are shown on this menu. Each input can control multiple functions, if desired. By default, the GPI inputs are not set to control any function. The **GPI-In Menu** is shown in Figure 4–8.

Figure 4–8   GPI-In Menu

GPI-In Menu

Gamma Set	3	4	5
Blue Screen	3	4	5
Mono Mode	3	4	5
Video Scale	3	4	5
Level Meters	3	4	5
Center Marker	3	4	5
Area Marker	3	4	5
Safety Marker	3	4	5

Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1. **Gamma Set**: The gamma parameters are described in the Video Menu on page 32. The **Gamma Select** option in the **Video Menu** must be set to **GPI** for a GPI input to take effect.

2. **Blue Screen**: Blue screen is described in the Video Menu on page 32. The **Blue Screen** option in the **Video Menu** must be set to **GPI** for a GPI input to take effect.

3. **Mono Mode**: Monochrome mode is described in the Video Menu on page 32. The **Mono Mode** option in the **Video Menu** must be set to **GPI** for a GPI input to take effect.

4. **Video Scale**: Video scaling is described in the **Scale Type** option on the Video Menu on page 32. The **Scale Type** option in the **Video Menu** must be set to **GPI** for a GPI input to take effect.

5. **Level Meters**: The audio level meter parameters are described in the Audio Menu on page 33. The **Level Meter Display** option in the **Audio Menu** must be set to **GPI** for a GPI input to take effect.

6. **Center Marker**: The **Center Marker** enable is described in the Marker Menu on page 35. The **Center Marker** option in the **Marker Menu** must be set to **GPI** for a GPI input to take effect.

7. **Area Marker**: The **Area Marker** enable is described in the Marker Menu on page 35. The **Area Marker** option in the **Marker Menu** must be set to **GPI** for a GPI input to take effect.

8. **Safety Marker**: The **Safety Marker** enable is described in the Marker Menu on page 35. The **Safety Marker** option in the **Marker Menu** must be set to **GPI** for a GPI input to take effect.

OSD Menu

The **OSD** (On Screen Display) **Menu** sets up time-outs and positions for various text displays. The **OSD Menu** is shown in Figure 4–9.

Figure 4–9   OSD Menu

| OSD Menu				
Source ID	Off	On	5 Sec	
Source Position	T Left	T Right	B Left	B Right
Adjust Position	Top	Center	Bottom	
OSD Timeout	Off	10 Sec	30 Sec	1 Min

Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1. **Source ID**: The **Source ID** display shows the type of input that is being displayed. This display can be set to **Off**, **On**, or to only display for 5 seconds after any source change. The default setting is **On**. The position on the screen can be adjusted by the **Source Position** option in this menu.

2. **Source Position**: The **Source ID** may be displayed at one of four locations on the screen. By default, the **Top Left** location is selected.

3. **Adjust Position**: When the **Adjust** button is pressed, words appear describing what can be adjusted. The **Adjust Position** option specifies one of three locations where this description will appear on the screen. By default, the **Bottom** location is selected.

4. **OSD Time-out**: These menus may be set to either persist on the screen indefinitely until the **Menu** button is pressed to exit (**Off**), or they may automatically time out and disappear after one of three time choices. By default, **10** seconds is selected.

System Menu

The **System Menu** sets up basic operational parameters for each MPEG-3270 or MPEG-4290 screen. This menu is shown in Figure 4–10.

Figure 4–10   System Menu
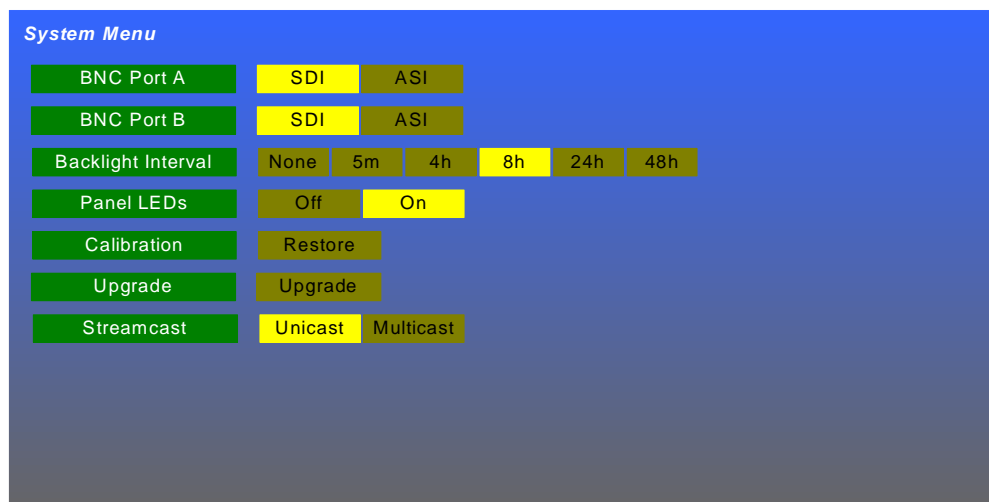
Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1. **BNC Port A**: Using this option, you must designate whether the type of signaling to the **Port A** BNC connector on the back panel is **SDI** or **ASI**. By default, **SDI** is chosen.

2. **BNC Port B**: Using this option, you must designate whether the type of signaling to the **Port B** BNC connector on the back panel is **SDI** or **ASI**. By default, **SDI** is chosen.

3. **Backlight Interval**: To preserve the life of the LCD backlight on each screen, a time-out is provided. This interval can be set to **None**, which leaves and backlight on all of the time, or to one of 5 time intervals. By default, **8** hours is chosen.

4. **Panel LEDs**: In certain environments, the Power LED and other status LEDs can be distracting. The LEDs on the front panel can be dimmed (Refer to Panel LEDs, Item 9 on page 27 in the Adjust Settings section.) or they can be turned off. This option allows the Panel LEDs to be **Off** while the MPEG-3270 or MPEG-4290 is in operation. The default setting is **On**, which causes the Panel LEDs

to indicate whenever the MPEG-3270 or MPEG-4290 is powered and turned on.

5.   **Calibration**: If at any time you need to set a MPEG-3270 or MPEG-4290 screen back to its original factory calibration, this option can be used.

6.   **Upgrade**: If you have a software upgrade on a flash drive that you would like to apply to the MPEG-3270 or MPEG-4290, use this option and then following the instructions that will appear on the screen.

7.   **Streamcast:** Set this to **Unicast** or **Multicast**, depending upon what will be expected in the stream.

Preset Menu

A Preset is a complete configuration. Each screen can have up to 6 Presets that can be recalled at any time to reconfigure. The **Preset Menu** lets you save, recall, and name presets for each MPEG-3270 or MPEG-4290 screen and is shown in .

To offer you maximum configuration flexibility, you can:

• Name your presets using up to 14 characters.

• Copy one preset to another.

• Copy all presets from one screen to another.

• Restore each preset to its original factory default.

Figure 4–11   Preset Menu
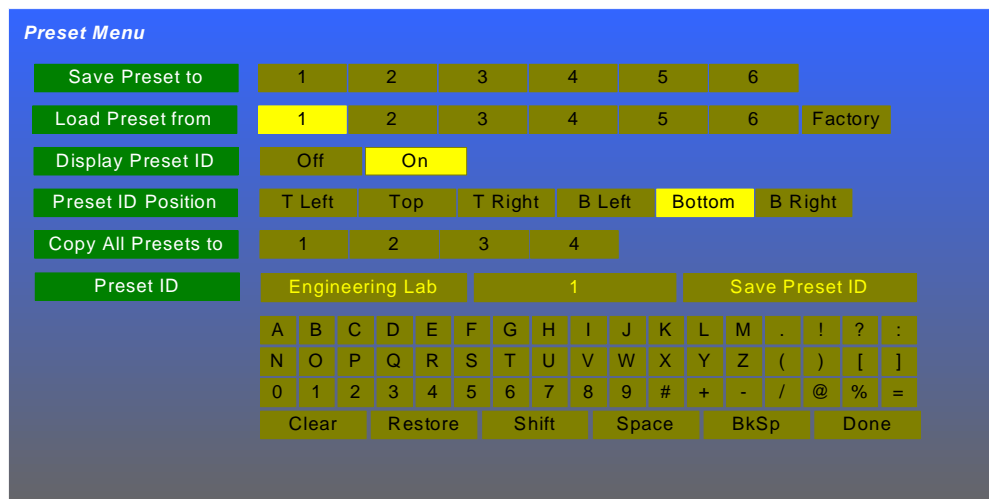
Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the option selection and press to choose it:

1. **Save Preset to**: To save the current MPEG-3270 or MPEG-4290 screen configuration select one of the six preset locations and press the **Volume** knob. As you rotate through each numbered preset, its name (if any) will appear in the **Preset ID** option on this menu.

2. **Load Preset from**: To recall a preset configuration from one of the six preset locations to the current MPEG-3270 or MPEG-4290 screen configuration, select one of the presets and press the **Volume** knob. As you rotate through each numbered preset, its name (if any) will appear in the **Preset ID** option on this menu. Alternatively, you may select **Factory** to recall the original factory configuration for each screen.

3. **Display Preset ID**: If you have entered an **Preset ID** for the currently recalled Preset, you may display this ID on the screen. This option sets this display option **On** or **Off**. By default, it is **On**.

4. **Preset ID Position**: This option sets the screen location for the **Preset ID**, if you have entered one and if the **Display Preset ID** option in this menu is On. Six locations are offered and **Bottom** is selected by default.

5. **Copy All Presets to**: It can be convenient to configure one of the MPEG-3270 or MPEG-4290 screens and then simply duplicate this

configuration in each of the other screens. This option allows you to copy all 6 presets from one screen to another.

6. **Preset ID**: The currently-recalled preset name and number are shown. To name or rename a preset, recall it using the **Load Preset from** function on this menu. Then click the **Preset ID** function. An on-screen keypad is provided to use to enter text to name each preset. Enter the text, by rotating the **Volume** knob to highlight each character and the pressing it to add that character to the text. **Clear**, **Restore**, **Shift**, **Space**, **Backspace**, and **Done** controls are also provided. Up to 14 characters may be entered. When you are finished, select **Done**. To save the new text, rotate the **Volume** knob to highlight **Save Preset ID** and press it. To quit without saving the name, press the **Menu** button instead.

Network Menu

Before the Ethernet port can be used, it must be configured. The **Network Menu** where this is done is shown in Figure 4–12

Figure 4–12   Network Menu

Rotate the **Volume** knob to highlight the item to be adjusted, and then press to enter it. Again rotate the **Volume** knob to the item you need to change and press to replace it. A number in the keypad below will then be highlighted. Rotate and press to select the new numeric entry. Use

Clear to start over and **Done** when finished. The changeable fields are as follows:

1. **IP Address**: After each numeric field is changed, the numbers turn from yellow to black to denote they were changed. When you have finished, select **Save**. After a few seconds, the action will be complete, the numbers will turn yellow, and **IP Address** will be highlighted.

2. **IP Mask**: After each numeric field is changed, the numbers turn from yellow to black to denote they were changed. When you have finished, select **Save**. After a few seconds, the action will be complete, the numbers will turn yellow, and **IP Mask** will be highlighted.

3. **Gateway Address**: After each numeric field is changed, the numbers turn from yellow to black to denote they were changed. When you have finished, select **Save**. After a few seconds, the action will be complete, the numbers will turn yellow, and **Gateway Address** will be highlighted.

4. **Port Number**: When the **Port Number** field is changed, the number turns from yellow to black to denote it was changed. When you have finished, select **Save**. After a few seconds, the action will be complete, the number will turn yellow, and **Port Number** will be highlighted.

Status Menu

The **Status Menu** does not provide editable options, but instead reports on a variety of useful information, internal settings, and version numbers.

Figure 4–13   Status Menu
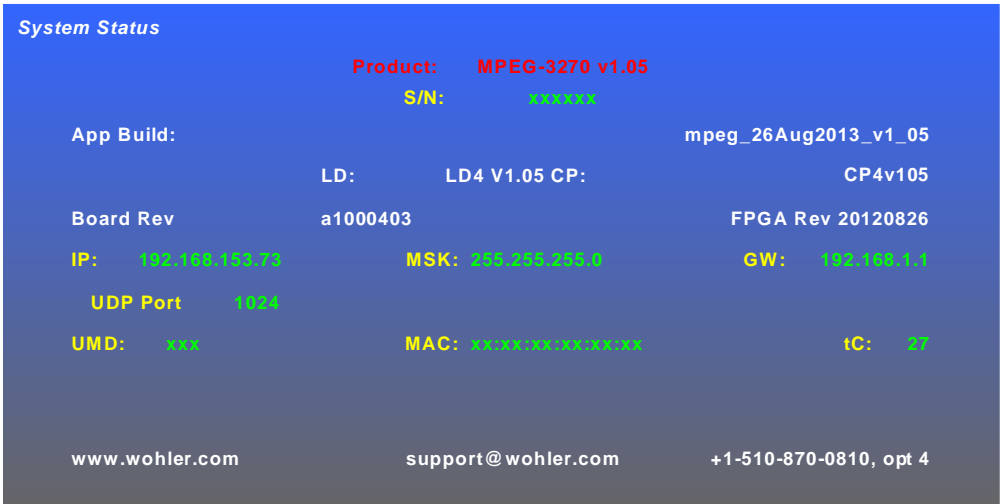
MPEG Menu

The **MPEG Menu** is a combination status screen and menu. Its operation is described in

Specifications

Introduction

Overview

Specifications, compliance information, and a block diagram of the MPEG-3270 and MPEG-4290 are provided in this chapter.

Topics

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Specifications

The specifications of the audio/video monitors are listed below.

Table 5–2   MPEG-3270 Specifications

Specification	MPEG-3270 Values
Number of Screens	2
Display	7.0" diagonal
Native Aspect Ratios	16:9
Viewing Angle	80°H x 80°V
Screen Colors	16.7M
Resolution (Dots, H x V)	800 x 480
Dot Pitch (H x V, mm)	0.0635 x 0.1905
Contrast Ratio	1000:1
Pixel Response (ms)	18 typical
Luminance	400 cd/m^2
LED Backlight Life	20,000 hours
Dimensions (H x W X D)	5.5" x 19" x 2.2" (143 x 483 x 56 mm)
Shipping Weight	5.9 lbs (2.68 kg)
Net Weight	4.65 lbs (2.11 kg)
Power Consumption	24 VDC at 3 A. CE & UL power supply. It cannot be harmed by accidental reverse connection of power.
Operating Temperature	0°C (32°F) to 40°C (104°F)
Inputs (per screen)	• 2 BNC: 3G/HD-SDI or ASI (75 Ω) • 1 HDMI • 1 RJ-45: Tally and GPI
Inputs (per unit)	• 1 RS-485 • 1 RJ-45: Ethernet
Input and Output (per unit)	• 1 USB
Outputs (per screen)	• 2 BNC: 3G/HD-SDI or ASI (75 Ω)
Outputs (per unit)	• 1 RS-485 • 1/8" Headphone Jack
Space Required	3 RU
Supplied Accessories	DC power adapter

Note: All specifications are subject to change without notice.

Table 5–3   MPEG-4290 Specifications

Specification	MPEG-4290 Values
Number of Screens	2
Display	9.0″ diagonal
Native Aspect Ratios	16:9
Viewing Angle	88°H x 88°V
Screen Colors	16.7M
Resolution (Dots, H x V)	800 x 480
Dot Pitch (H x V, mm)	0.082 x 0.246
Contrast Ratio	600:1
Pixel Response (ms)	25 typical
Luminance	400 cd/m^2
LED Backlight Life	20,000 hours
Dimensions (H x W x D)	7″ x 19″ x 2.2″ (178 x 483 x 56 mm)
Shipping Weight	7.3 lbs (3.31 kg)
Net Weight	6.05 lbs (2.75 kg)
Power Consumption	24 VDC at 3 A. CE & UL power supply. It cannot be harmed by accidental reverse connection of power.
Operating Temperature	0°C (32°F) to 40°C (104°F)
Inputs (per screen)	• 2 BNC: 3G/HD-SDI or ASI (75 Ω) • 1 HDMI • 1 RJ-45: Tally and GPI
Inputs (per unit)	• 1 RS-485 • 1 RJ-45: Ethernet
Input and Output (per unit)	• 1 USB
Outputs (per screen)	• 2 BNC: 3G/HD-SDI or ASI (75 Ω)
Outputs (per unit)	• 1 RS-485 • 1/8″ Headphone Jack
Space Required	4 RU
Supplied Accessories	DC power adapter

The acceptable signal input formats are listed below.

Table 5–4   Acceptable Signal Input Formats

Category	Signal Types
3G-SDI (SMPTE-425M, Level A)	SMPTE-274: 1080p (60/59.94/50)
HD-SDI (SMPTE-292)	SMPTE-296M: 720p (60/59.94/50/ 30/29.97/25/24/ 23.98)
	SMPTE-260M: 1035i (60/59.94)
	SMPTE-274: 1080i (60/59.94/50)
	SMPTE-274: 1080psF (24/23.98)
	SMPTE-274: 1080p (30/29.97/25/24/ 23.98)
MPEG / ASI	704 x 480i (60/59.94)
	704 x 576i (50)
	720 x 480i (60/59.94)
	720 x 480p (60/59.94)
	720 x 576i (50)
	1280 x 720p (60/59.94/50/30/29.97/ 25/24/23.98)
	1440 x 1080i (60/59.94/50)
	1920 x 1080i (60/59.94/50)
	1920 x 1080p (60/59.94/50/30/29.97/ 25/24/23.98)
	1920 x 1088i (60/59.94/50)
	1920 x 1088p (60/59.94/50/30/29.97/ 25/24/23.98)

Table 5–4   Acceptable Signal Input Formats

Category	Signal Types
HDMI	525i - NTSC
	625i - PAL
	525i - PAL-M
	720 x 480i (59.94)
	720 x 576i (50)
	720 x 480p (59.94)
	720 x 576p (50)
	1280 x 720p (60/59.94/50)
	1920 x 1080i (60/59.94/50)
	640 x 480 (60)
	800 x 600 (60)
	1024 x 768 (60)
	1280 x 1024 (60)
	1600 x 1200 (60)
	1920 x 1080p (60/59.94/50/30/29.97/ 25/24/23.98)
TS Protocols	SPTS/MPTS-ASI, Unicast-IP/IGMP UDP/RTP
MPEG Video (ASI/IP)	100 kbs - 30 Mbps CBR, MPEG-2 4:2:0 MP @ML/HL/HP, MPEG-4 4:2:0 (H.264 MP/LP to L4.2)
MPEG Audio	MPEG-1/2 Layer II, AAC-LC 16-384 kbps

Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Functional Overview

The following block diagrams (Figure 5–14 and Figure 5–15) show the overall functionality of the MPEG-3270 and MPEG-4290 monitors.
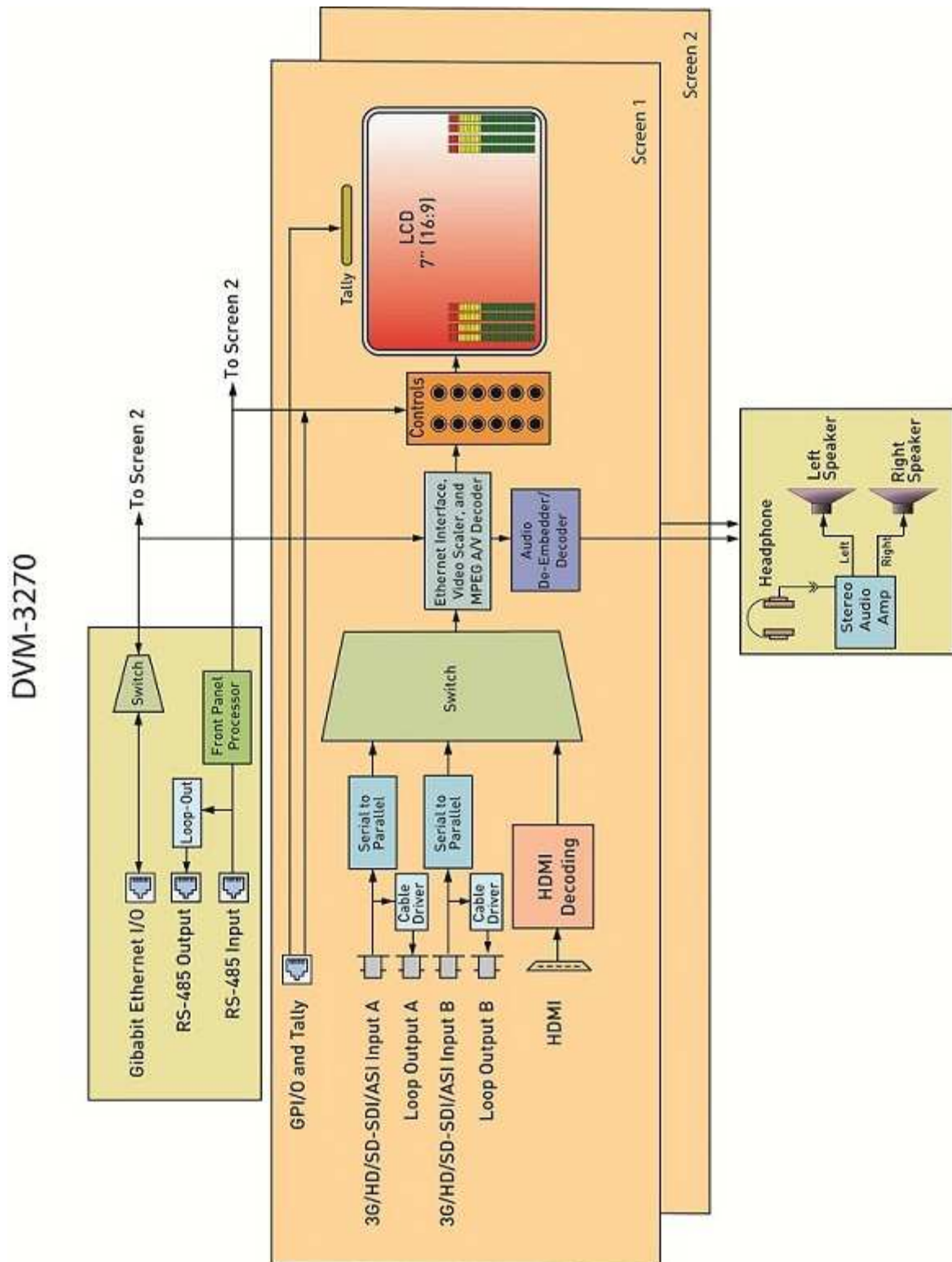
Figure 5–14   MPEG-3270 Block Diagram

Figure 5–15   MPEG-4290 Block Diagram